

CLAIMS:

1. A method of segmenting a three-dimensional structure from a three-dimensional, and in particular medical, data set while making allowance for user corrections, having the following steps:

- a) provision of a three-dimensional deformable model (M) whose surface is
5 formed by a network of meshes that connect nodes at the surface of the model,
- b) positioning of the model (M) at a point in a three-dimensional data set at which the structure (6) to be segmented is situated,
- c) manual displacement of nodes,
- d) re-calculation of the nodes of the model (M) in weighted consideration of the
10 nodes that have been displaced manually.

2. A method as claimed in claim 1, wherein step d) comprises the following steps:

- determination of a candidate point for each sub-surface defined by meshes of
15 the model, each candidate point being situated on a normal to the sub-surface,
- assignment of a weighting factor to each node that has been displaced, the weighting factor being larger the smaller the distance between the displaced node and a boundary surface of the structure to be segmented,
- re-calculation of the nodes of the model while allowing for the candidate
20 points determined, the displaced nodes, and the weighting factors assigned.

3. A method as claimed in claim 1, characterized in that in step d) the nodes are re-calculated by minimizing a weighted sum of external energy, internal energy and an energy that takes into account the manually displaced nodes.

25 4. An image-processing arrangement for performing the method claimed in claim 1, comprising:

- a memory unit for storing a deformable model whose surface is formed by a network of meshes that connect the nodes at the surface of the model, and for storing a three-dimensional data set and in particular a medical data set,
- an image-reproduction unit for reproducing a structure to be segmented and
5 the deformable model,
- a calculating unit for re-calculating the nodes of the model in weighted consideration of nodes which have been displaced manually,
- a positioning unit for positioning the model at the point in the three-dimensional data set at which the structure to be segmented is situated,
- 10 - a control unit for controlling the memory unit, the image-reproduction unit, the calculating unit and the positioning unit to perform the following steps:
 - a) provision of a three-dimensional deformable model whose surface is formed by a network of meshes connecting nodes at the surface of the model,
 - b) positioning of the model at a point in a three-dimensional data set at which the
15 structure to be segmented is situated,
 - c) manual displacement of nodes,
 - d) re-calculation of the nodes of the model in weighted consideration of the nodes that have been displaced manually.
- 20 5. A computer program for a control unit for controlling a memory unit, an image-reproduction unit, a calculating unit and a positioning unit of an image-processing arrangement for performing the method as claimed in Claim 1 according to the following steps:
 - a) provision of a three-dimensional deformable model whose surface is formed
25 by a network of meshes connecting nodes at the surface of the model,
 - b) positioning of the model at a point in a three-dimensional data set at which the structure to be segmented is situated,
 - c) manual displacement of nodes,
 - d) re-calculation of the nodes of the model in weighted consideration of the
30 nodes that have been displaced manually.